Complete Listing of Claims Pursuant to 37 C.F.R. §1.121

Pursuant to 37 C.F.R. §1.121 the following is a complete listing of the claims of the present application. In this set of claims, please amend the claims as follows. With the amendments to the aforementioned claims, the following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A method of performing a chemical reaction between reactants comprising:

(a) subjecting an emulsion comprising

(i) a discontinuous first phase in which at least one of the reactants is present; and

(ii) a substantially continuous second phase,

to a physical or chemical change such that a substantially continuous phase is formed from the discontinuous phase; and

(b) providing conditions in which the chemical reaction between the reactants takes place.

2. (original) A method according to claim 1 wherein the discontinuous first phase is an aqueous phase.

3. (currently amended) A method according to claim 1 [or claim 2] wherein the continuous second phase is an inert or an organic phase.

4. (original) A method of performing a chemical reaction between reactants in an aqueous phase comprising:

(a) subjecting an emulsion comprising

(i) a discontinuous aqueous phase in which at least one of the reactants is present; and

(ii) a continuous inert phase,

to a physical or chemical change such that a substantially continuous aqueous phase is formed; and

(b) providing conditions in which the chemical reaction between the reactants takes place.

5. (currently amended) A method according to [any one of claims 1 to 4] claim 1 or claim 4 wherein the chemical reaction is a reaction selected from the group consisting of: DNA sequencing, Polymerase Chain Reaction (PCR), Rolling Circle Amplification (RCA), Ligase chain Reaction (LCR), Rapid Amplification of cDNA Ends (RACE), reverse-transcriptase PCR (RT-PCR), DNA fingertyping, DNA genotyping, endonuclease-restriction digest, DNA ligation, DNA phosphorylation, DNA methylation, DNA labeling, ribonucleic acid (RNA) digestion, proteolytic digestion, and protein modification.

6. (currently amended) A method according to claim [5 wherein] 1 or claim 4 wherein the chemical reaction is protein modification and wherein the protein modification is glycosylation or phosphorylation.

7. (currently amended) A method according to claim [5] 1 or claim 4 wherein the chemical reaction is DNA sequencing or PCR.

8. (currently amended) A method according to [any one of claims 1 to] claim 1 or claim 4 wherein the reactants are selected from the group consisting of: DNA, RNA, mRNA, proteins, enzymes, salts, radioactive isotopes and carbohydrates.

9. (currently amended) A method according to claim [8 wherein the DNA is] 1 or claim 4 wherein the reactants are selected from the group consisting of: gDNA, cDNA, mDNA, primer DNA, plasmid DNA or a PCR product.

10. (currently amended) A method according to claim [8] 1 or claim 4 wherein the reactant is an enzyme and wherein the enzyme is a DNA polymerase, RNA polymerase, reverse transcriptase, restriction endonuclease, DNA methylase, polynucleotide kinase, nucleotide transferase, DNA ligase, RNA ligase, protease, or other DNA, RNA or protein modifying enzyme.

11. (currently amended) A method according to [any one of claims 2 to 10] claim 2 or claim 4 wherein the aqueous phase is in a submicrolitre or microlitre volume.

12. (currently amended) A method according to [any one of claims 3 to 11] claim 3 or claim 4 wherein the emulsion comprises a single inert phase and two or more different aqueous phases.

13. (currently amended) A method according to [any one of claims 1 to 11] claim 1 or claim 4 wherein the emulsion is prepared by combining a first and second emulsion wherein

(a) the first emulsion comprises a first aqueous phase and a first inert phase wherein the first aqueous phase comprises a first reactant; and

(b) the second emulsion comprises a second aqueous phase and a second inert phase wherein the second aqueous phase comprises a second reactant.

14. (original) A method according to claim 13 wherein the first and second inert phases are the same but the first and second aqueous phases are different.

15. (original) A method according to claim 13 wherein the first insert phase and the second inert phase are different.

16. (currently amended) A method according to [any one of claims 3 to 15] claim 3 or claim 4 wherein the inert phase is a non-polar water-immiscible compound or composition.

17. (currently amended) A method according to claim [16] 3 or claim 4 wherein the inert phase is selected from the group consisting of: a hydrocarbon compound, a linear, branched or cyclic polysiloxane; a mineral or petroleum oil.

18. (currently amended) A method according to claim [17] 3 or claim 4 wherein the inert phase is a hydrocarbon compound and wherein the hydrocarbon compound is selected from the group consisting of: pentane, hexane, heptane, octane, nonane, decane, dodecane, hexadecane, octadecane, eicosane, squalene and derivates thereof.

19. (currently amended) A method according to claim [17] 3 or claim 4 wherein the inert phase is a hydrocarbon compound and wherein the hydrocarbon is selected from the group consisting of: 7-methyl-1,6-octadiene or 2,2,4-trimethylpentane, 1-dodecene, 1-hexadecane, cyclohexane and propylcyclohexane.

20. (currently amended) A method according to [any one of claims 3 to 12] claim 3 or claim 4 wherein the inert phase is selected from the group consisting of: mineral oil, hexadecane, dodecane and n-hexane.

21. (currently amended) A method according to [any one of claims 1 to 20] claim 1 or claim 4 wherein the emulsion comprises a surfactant.

22. (currently amended) A method according to claim [21] 1 or claim 4 wherein the emulsion comprises a surfactant and wherein the surfactant is selected from the group of non-ionic surfactants consisting of: APO-10, APO-12, BRIJ-35, C8E6, C10E6, C10E8, C12E6, C12E8 (Atlas G2127), C12E9, C12E10 (Brij 36T), C16E12, C16E21,

cyclohexyl-*n*-ethyl-beta-D-maltoside, cyclohexyl-*n*-hexyl-beta-D-maltoside, cyclohexyl-*n*-methyl-beta-D-maltoside, *n*-decanoylsucrose, *n*-decyl-beta-D-glucopyranoside, *n*-decyl-beta-D-maltopyranoside, *n*-decyl-beta-D-thiomaltoside, *n*-dodecanoylsucrose, *n*-dodecyl-beta-D-glucopyranoside, *n*-dodecyl-beta-D-maltoside, genapol C-100, genapol X-80, genapol X-100, HECAMEG, heptane-1,2,3-triol, *n*-heptyl-beta-D-glucopyranoside, *n*-heptyl-beta-D-thioglucopyranoside, LUBROL PX, MEGA-8 (ocatanoyl-N-methylglucamide), MEGA-9 (nonanoyl-N-methylglucamide), MEGA-10 (decanoyl-N-methylglucamide), *n*-nonyl-beta-D-glucopyranoside, Nonidet P-10 (NP-10), Nonidet P-40 (NP-40), *n*-nonyl-beta-D-glucopyranoside, Nonidet P-10 (NP-10), Nonidet P-40 (NP-40), *n*-octanoyl-beta-D-glucoslyamine (NOGA), *n*-octanoylsucrose, *n*-octyl-*alpha*-D-glucopyranoside, *n*-octyl-beta-D-glucopyranoside, *n*-octyl-beta-D-maltopyranoside, PLURONIC F-68, PLURONIC F-127, THESIT, TRITON X-100 (*tert*-C8-Ø-E9.6;like NP-40), TRITON X-100 hydrogenated, TRITON X-114 (*tert*-C8- Ø-E7-8), TWEEN 20 (C12-sorbitan-E20;Polysorbate 20), TWEEN 40 (C16-sorbitan-E20), TWEEN 60 (C18-sorbitan-E20), TWEEN 80 (C18:1-sorbitan-E20), *n*-undecyl-beta-D-maltoside, cetearyl alcohol, hydrogenated tallow alcohol, lanolin alcohols, palmamide, peanutamide MIPA, PEG-50 tallow amide, cocamidopropylamine oxide, lauramine oxide, PEG-8 dilaurate, PEG-8 laurate, PEG-4 caster oil, PEG-120 glyceryl myristate, glyceryl palmitate lactace, polyglyceryl-6 distearate, polyglyceryl-4 oleyl ether, methyl gluceth-20 sesquisterase, sucrose disterate, polysorbate-60, sorbitan sequiisostearate, trideceth-3 phosphate, trioleth-8 phosphate, ceteareth-10, nonoxynol-9, PEG-20 lanolin, PPG-12-PEG-65 lanolin oil, dimethicone copolyol, meroxapol 314, poloxamer 122, PPG-5-cetech-20 and lauryl glucose.

23. (currently amended) A method according to claim [21] <u>1 or claim 4 wherein the emulsion comprises a surfactant and</u> wherein the surfactant is selected from the group of ionic surfactants consisting of: caprylic acid (n-octanoate), cetylpyridinium chloride, CTAB (Cetyltri-methylammonium bromide), cholic acid, decanesulfonic acid, deoxycholic acid, dodecyltrimethyl-ammonium bromide, glycocholic acid, glycodeoxycholic acid, lauroylsarcosine (sarkosyl), lithium n-dodecyl sulfate, lysophosphatidyl-choline, sodium n-dodecyl sulfate (SDS, lauryl sulfate), taurochenodeoxy-cholic acid, taurocholic acid, taurodehydrocholic acid, taurodeoxycholic acid, taurolithocholic acid, tauroursodeoxycholic

acid, tetradecyltrimethyl-ammonium bromide (TDTAB), TOPPS, di-TEA-palmitoyl aspartate, sodium hydrogenated tallow glutamate, palmitoyl hydrolysed milk protein, sodium cocoyl hydrolysed soy protein, TEA-abietoyl hydrolysed collagen, TEA-cocoyl hydrolysed collagen, myristoyl sarcosine, TEA-lauroyl sarcosinate, sodium lauroyl taurate, sodium methyl cocoyl taurate, lauric acid, aluminum stearate, cottonseed acid, zinc undecylenate, calcium stearoyl lactylate, laureth-6 citrate, nonoxynol-8 carboxylic acid, sodium trideceth-13 carboxylate, DEA-oleth-10 phosphate, dilaureth-4 phosphate, lecithin, sodium cocoyl isethionate, sodium dodecylbenzene solfonate, sodium cocomonoglyceride sulfonate, sodium C12-14 olefin sulfonate, sodium C12-15 pareth-15 sulfonate, sodium lauryl solfoacetate, dioctyl sodium sulfosuccinate, disodium oleamido MEA-sulfosuccinate, ammonium laureth sulfate, sodium C12-13, pareth sulfate, MEA-lauryl sulfate, cocamidopropyl dimethylamine lactate, dimethyl lauramine, soyamine, stearyl hydroxyethyl imidazoline, PEG-cocopolyamine, PEG-15 tallow amine, benzalkonium chloride, quaternium-63, oleyl betaine, sodium lauramidopropyl hydroxyphostaine, cetylpyridinium chloride, isostearyl ethylimidonium ethosulfate, cocamidopropyl ethyldimonium ethosulfate, hydroxyethyl cetyldimonium chloride, quaternium-18 and cocodimonium hydroxypropyl hydrolysed hair keratin.

24. (currently amended) A method according to claim [21] 1 or claim 4 wherein the emulsion comprises a surfactant and wherein the surfactant is selected from the goup of zwitterionic surfactants consisting of: BigCHAP, CHAPS, CHAPSO, DDMAU, EMPIGEN BB (N-dodecyl-N,N-dimethylglycine), lauryldimethylamine oxide (LADAO, LDAO, Empigen OB), SWITTERGENT 3-08, SWITTERGENT 3-10, ZWITTERGENT 3-12 (3-dodecyl-dimethylammonio-propane-1-sulfonate), ZWITTERGENT 3-14, ZWITTERGENT 3-16, disodium cocoamphocarboxymethylhydroxy-propylsulfate, disodium cocoamphodipropionate, sodium cocoamphoacetate, sodium lauroampho PG-acetate phosphate, sodium tallow amphopropionate, sodium undecylenoamphopropionate, aminopropyl laurylglutamide, dihydroxyethyl soya glycinate and lauraminopropionic acid.

25. (currently amended) A method according to claim [21 wherein the surfactant is] 1 or claim 4 wherein the emulsion comprises TRITON X-100 or TRITON-X114.

26. (currently amended) A method according to [any one of claims 1 to 25] claim 1 or claim 4 wherein the physical or chemical change is a change in temperature, pressure or exposure to a chemical compound.

27. (currently amended) A method according to [any one of claims 1 to 25] claim 1 or claim 4 wherein the physical change is a change in temperature.

28. (currently amended) A method according to [any one of claims 1 to 25] claim 1 or claim 4 wherein the chemical change is the addition of glycerol.

29. A method according to claim 4 wherein when the chemical reaction is a DNA sequencing or PCR reaction, the inert phase comprises mineral oil and the surfactant is TRITON X-100 or TRITON-X114.

30. (currently amended) A method according to [any one of claims 1 to 29] claim 1 or claim 4 wherein the ratio of the aqueous to inert phase is in the range of 1:4 to 1:19.

31. (currently amended) A method according to [any one of claims 1 to 30] claim 1 or claim 4 wherein the inert phase is removed from the substantially continuous aqueous phase after the chemical reaction has taken place.

32. (currently amended) A method according to claim [31] 1 or claim 4 wherein the inert phase is removed from the substantially continuous aqueous phase by suction or evaporation.

33. (currently amended) A method according to [any one of claims 3 to 12] claim 3 or claim 4 wherein the aqueous phase and the inert phase are submitted to the reaction conditions together.

34. (original) A method of performing a chemical reaction between at least two reactants in an aqueous solution comprising:

(a) combining a first emulsion in which an aqueous solution comprising a first reactant is emulsified in a first inert phase, with a second emulsion in which an aqueous solution comprising a second reactant is emulsified in a second inert phase;

(b) subjecting the mixture to a physical or chemical change such that the emulsions collapse and the emulsified aqueous solution coalesces into a substantially single or substantially continuous aqueous phase;

(c) subjecting the aqueous phase to conditions in which the chemical reaction between the reactants take place.

35. (original) A method of performing a chemical reaction between reactants in an organic phase comprising:

(a) subjecting an emulsion comprising

(i) a discontinuous organic phase in which at least one of the reactants is present; and

(ii) a continuous aqueous phase,

to a physical or chemical change such that a substantially continuous organic phase is formed; and

(b) providing conditions in which the chemical reaction between the reactants takes place.

36. (original) A method of performing a chemical reaction between at least two reactants in an organic solution comprising:

(a) combining a first emulsion in which an organic solution comprising a first reactant is emulsified in a first aqueous phase, with a second emulsion in which an organic solution comprising a second reactant is emulsified in a second aqueous phase;

(b) subjecting the mixture to a physical or chemical change such that the emulsions collapse and the emulsified organic solution coalesces into a substantially single or substantially continuous organic phase.

(c) subjecting the organic phase to conditions in which the chemical reaction between the reactants takes place.